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ORIE 4741: Project Proposal

The question we aim to answer is the following: How can we predict the value of the S&P 500? To answer this question we will be using the S&P 500 SPY dataset (which can be reached at https://www.kaggle.com/datasets/gkitchen/s-and-p-500-spy) in order to forecast and model our predictions and risk using methods we've learned in class. The S&P 500 is widely regarded as a benchmark for the United States stock market, and its value is closely monitored by investors, financial analysts, and policymakers. Predicting the future value of the S&P 500 SPY can help investors make informed decisions about buying or selling stocks, optimize their investment portfolios, and manage their risk exposure.

In order to model our predictions we will use variables such as dates, open and closing prices, volume traded, etc. We will also look into combining this data with other data in order to see if this can help us create more accurate models and predictions. We will attempt to use a regression model, and fit a curve that accurately represents the value of the S&P 500 SPY over time. We will explore different types of regression models, and experiment with different types of kernels in order to implement the most accurate model possible.

It is worth it to work on this problem because it can allow investors to make smarter investments and create value out of the money they put in by using an approximate measure of the United States stock market months in the future. We will succeed because we have learned many new methods in ORIE 4741 and think they are especially helpful in answering questions related to predicting the future of the stock market based on previous and current data.